

Remarks

The Office Action confirmed the restriction requirement, raised some indefiniteness issues with respect to claim 1, rejected the claims under § 103, and raised a provisional double patenting issue. In view of the amendment above, the arguments below, and the enclosed terminal disclaimer, reconsideration is respectfully requested with respect to amended claims 1-8.

Supplemental Prior Art Statement

On February 6, 2003 a supplemental prior art statement was filed. Apparently it did not reach the examiner before the Office Action was mailed on February 20, 2003. Applicants request confirmation that the art recited in the supplemental prior art statement has been considered.

Restriction Requirement

Applicants hereby confirm the election of Group I (claims 1-8), and hereby confirm the cancellation of claims 9-16, without prejudice to the filing of a divisional covering the restricted subject matter.

Inventorship

Applicants confirm that the restriction to Group I has not affected the inventorship.

§ 112 Indefiniteness Issues

Claim 1 (and thus also claims 2-8) have now been amended to clarify that each of the surfactant, poly D-glucosamine and furanone are at least present. This confirms that a zero percentage is not intended. This is believed to address the examiner's concerns in that regard. Applicants thank the examiner for nevertheless completing the substantive examination under the assumption that both poly D-glucosamine and furanone are present.

It should also be noted that claim 2 has been further amended to clarify that the furanone is brominated. Paragraph

49 of the patent application notes that brominated furanones are preferred.

§ 103 Issues

Claim 1 (and thus also claims 2-8) have now been amended to specify that the poly D-glucosamine is chitosan itself (see Fig. 1 regarding chitosan). As noted at paragraphs 32 and 33 of the specification, chitosan is the preferred poly D-glucosamine because it is naturally occurring, available at low cost, non-toxic, biodegradable and a renewable resource, while still assisting antimicrobial activity.

Turning now to the Office Action's obviousness rejections, WO 99/53915 is deficient in not teaching anything about poly D-glucosamines, much less chitosan. In formulating ~~each of the three rejections the Office Action therefore also~~ necessarily relies on other references such as Lang et al. (U.S. patent 4,931,271), Garris (U.S. patent 5,776,876), or Cauwet et al. (U.S. patent 5,661,118).

However, none of these three primary references disclose formulas intended as hard surface cleaners. Lang et al. and Cauwet et al. are directed to treating soft surfaces such as hair or skin. Garris is directed to cleaning the soft fibers of a swimming pool filter. Thus, even if one added a furanone of WO 99/53915 to a Lang et al., Garris or Cauwet et al. cleaner as the Office Action proposes, it would still result in a soft surface cleaner, not a hard surface cleaner. Hence, the claims would still not be met.

More importantly, the limitation of claim 1 to chitosan turns whatever relevance these references might have had into teachings away. Lang et al. notes in column 1, beginning at line 46 that it is "necessary to put the chitosan to use in separate treatments, namely before and/or after the shampooing". This is a clear teaching that it is undesirable to develop a surfactant-based cleaner that uses chitosan.

Moreover, chitosan is used on the hair or skin for its protective properties (see line 8 of page 2 of the application

specification). Hence it was perceived in the art as likely to leave a filmy residue. Leaving a filmy residue behind is typically undesirable in a hard surface cleaner, and the art's expectation that chitosan would leave a filmy residue would therefore be another teaching away.

The above comments affect the applicability of Cauwet et al., as well. Note that it does not teach use of chitosan itself. Rather, it describes a complex derivative having high cost in the context of a hair cleaner. Again, Lang et al. would teach away from the combination of chitosan itself with the furanone in a hair cleaning context.

With particular reference to Garris, the Office Action proposes to use a furanone patent document which doesn't even mention filter cleaning, and use a component thereof for a filter cleaner. However, the Office Action still fails to address why one would be motivated to use a filter cleaner on a hard surface cleaning application, particularly given the reputation of chitosan for leaving a filmy residue.

Moreover, Garris refers to chitosan as a builder or sequestrant. It nowhere teaches or suggests any antimicrobial property. The surprising antimicrobial improvement due to use of chitosan should overcome the purported pertinence of a teaching that chitosan can be used as a builder.

The remaining references made of record and not relied upon are Albarcarys et al. (U.S. patent 6,338,855), Hasenochri et al. (U.S. patent 6,190,678), McAtee et al. (U.S. patent 6,153,208), Meine et al. (U.S. patent 6,732,892), Robinson (U.S. patent 5,968,485), Franzke et al. (U.S. patent 6,068,383), Sebag et al. (U.S. patent 6,162,423), and De La Mettrie (U.S. patent 6,387,855).

Albarcarys et al. (U.S. patent 6,338,855) describes the use of chitosan salts as a hair and/or skin conditioning component of a cleansing article. It nowhere teaches or suggests any antimicrobial property and again, Lang et al. would teach away from the pertinence of Albarcarys et al. in a

surfactant-based cleaner, much less one intended for hard surface cleaning.

Hasenochri et al. (U.S. patent 6,190,678) and McAtee et al. (U.S. patent 6,153,208) describe the use of chitin, chitosan, or hydroxypropyl chitosan as a polymer in a skin or hair treatment composition. These nowhere teach or suggest any antimicrobial property and again, Lang et al. would teach away from the pertinence of these patents in a surfactant-based cleaner.

Franzke et al. describes the use of chitosan as a polymer in a hair treatment composition. It nowhere teaches or suggests any antimicrobial property and again, Lang et al. would teach away from the pertinence of Franzke et al. in a surfactant-based cleaner, much less one intended for hard surface cleaning.

Robinson describes the use of the chitosan derivative hydroxypropyl chitosan as a thickening and gelling agent (col. 12, line 60) in UV protectants, and nowhere teaches or suggests any chitosan-based antimicrobial property.

De La Mettrie and Sebag et al. describe the use of an amphoteric surfactant comprising chitosans partially modified with C₄ -C₈ dicarboxylic acids in a hair and/or skin product. Antimicrobial properties are not suggested and again, Lang et al. would teach away from the pertinence of Sebag et al. in a surfactant-based cleaner, much less one intended for hard surface cleaning.

Meine et al. describes the use of sodium chitosan methylene phosphonate complexing agents in food product cleaning compositions. Nowhere does this patent teach or suggest any chitosan-based antimicrobial property.

Provisional Double Patenting Issue

The enclosed terminal disclaimer should overcome any obviousness type double patenting issue vis a vis copending 10/035,499.

Conclusion

Claims 1-8 (as amended) are now believed to be in condition for allowance, and allowance is respectfully requested. Apart from a terminal disclaimer fee, no additional fees are believed to be required for entry of this amendment. However, should any additional fees be needed, please charge Deposit Account No. 17-0055 for the amount of the fees. In any event, please charge the terminal disclaimer fee to Deposit Account 17-0055.

Respectfully submitted,
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